

60,130-787; 99MRA0113

UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Fowler, et al.

GROUP ART UNIT: 2838

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SERIAL NO.: 09/832,677

EXAMINER: Patel, Rajnikant DEC 30 2003

FILED: 4/11/2001

FOR: CONVERSION OF SINGLE PHASE TO MULTIPLE PHASE

ATTORNEY DOCKET NO.: 60,130-787

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

OFFICIAL**RESPONSE**

Dear Sir:

In response to the fourth non-final Office Action of October 3, 2003, Applicant requests consideration of the following arguments.

Claims 1-21 remain in the application including independent claims 1 and 10. Claims 1 and 10 stand rejected under 35 U.S.C. 102(b) as being anticipated by cited Mizoguchi (4802079). Claims 1 and 10 stand rejected under 35 U.S.C. 102(e) as being anticipated by Yamanaka (6058032). The examiner asserted these rejections in the third non-final Office Action of June 6, 2003. Please see Applicant's response, dated August 27, 2003, for arguments responding to these rejections.

Claims 1 and 10 stand rejected under 35 U.S.C. 102(b) as being anticipated by newly cited Recker et al. (5198971) or newly cited Cocconi (5341075). In order to anticipate a claim, the reference must teach all of the features set forth in the claim. Neither Recker nor Cocconi

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teach all of the features of claims 1 and 10. The examiner argues that Figure 2 and the abstract of Recker teach all of the features of claims 1 and 10. Applicant disagrees.

Claim 1 requires the steps of producing single phase alternating current from a direct current source with pulse width modulation and splitting the single phase alternating current into a plurality of separate paths including at least a first path, a second path, and a third path. Recker does not teach producing single phase alternating current by using pulse width modulation and subsequently splitting the single phase alternating current into multiple separate paths.

Instead, Recker teaches the use of a system that produces AC output from DC input by using two (2) inverters. A first inverter has a first input for receiving DC input and an output for providing a first inverter output having first and second phases and a second inverter has an input for receiving DC input and an output for providing a second inverter output having first and second phases. An output circuit is connected to the first and second inverters for combining the first phases of the first and second inverter outputs into a first phase of AC output and for combining the second phases of the first and second inverter outputs into a second phase of the AC output. Recker produces multiple phases from the direct current input, i.e. Recker does not produce a single phase. Thus, Recker does not teach producing a single phase alternating current from a direct current source let alone teaching producing the single phase alternating current with pulse width modulation.

Claim 10 includes the features of a single pulse width modulation generator for converting direct current to alternating current to provide one power supply path of alternating current having a first phase, and a splitter for splitting the one power supply path of alternating current into a plurality of power supply paths including at least a first power supply path, a

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second power supply path, and a third power supply path. For similar reasons to those discussed above with regard to claim 1, Recker does not anticipate claim 10.

Cocconi also does not anticipate claims 1 or 10. Cocconi teaches the use of multiple power switches to produce three-phase alternating current from a direct current source. Current for the windings LS1, LS2, LS3 is supplied by a three-phase inverter 10. Each winding is coupled to one of the poles 21, 22, 23 of the inverter, which provides pulse width modulated current signals at predefined intervals. Each of the inverter poles comprises a pair of solid state switches that are supplied with DC power. Thus, the inverter uses six power switches to convert the DC power directly into the three-phase alternating power. This is similar to the method described in the background of the subject application. Applicant is claiming the producing of single phase alternating current with pulse width modulation where the single phase alternating current is subsequently split into three phases. Cocconi simply does not teach this feature.

Claims 1-6, 8, 10, 12-13, 16, and 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Young in view of Recker. This rejection is improper for several reasons. First, Young is non-analogous art. Second, the examiner has failed to establish a *prima facie* case of obviousness. Third, the references, even if properly combined, do not disclose, suggest, or teach the claimed features. Each of these issues will be separately addressed below.

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Octiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). The Young reference has no relevance to Applicant's invention.

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The Young reference is not in Applicant's field and is not reasonably pertinent to the particular problem that the Applicant has solved. Young is directed to commercial power plant technology for utility companies, and does not concern vehicles. Commercial power plant technology, which concerns high voltage power (in excess of 10,000 Volts) does not include any pertinent information that would help Applicant solve problems relating to 12-42 volt power supplies in vehicles.

The examiner argues, "Young discloses claimed invention a method for converting single phase alternating current to multiple phase alternating current for simultaneously powering multiple vehicle systems." Applicant disagrees with this characterization of Young. Young does not include any teachings directed to vehicle systems.

As discussed above, Young is non-analogous art. First, Young is not in the field of Applicant's endeavor. Applicant is designer and manufacturer of components for vehicles, which has nothing to do with Young's field of utility power supplies for residential and commercial units.

Second, Young is not reasonably pertinent to Applicant's particular problem. The Young reference is directed toward solving problems related to commercially-available power supplies in rural areas. Specifically, Young addresses a need for a utility system that allows industrial sized three-phase motors to be started and run from a single-phase commercial power line. Applicant's invention is directed to solving problems related to a demand for increased power supply in a vehicle to run multiple electrically operated vehicle systems such as power windows and power door locks. To meet the demand for an increased power supply, the automotive industry is moving from a traditional 12 volt system to a thirty-six volt (36V) / forty-two volt

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(42V) alternator system. As this transition is made, hybrid systems that can support both voltage systems are needed. Applicant's problem has nothing to do with the problems described in Young. Thus, Applicant would never look to the field of high voltage commercial utility technology to solve problems related to low 36 voltage vehicle power supplies. Thus, the Young is non-analogous art to Applicant's invention.

The examiner has also failed to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify the base reference or combine the reference teachings. Second, there must be reasonable expectation of success. Third, the prior art references must teach or suggest all of the claim limitations. The examiner has not satisfied any of these criteria.

There is no motivation or suggestion to modify Young with the teachings of Recker. Further, the examiner has not provided *any* explanation of the motivation or suggestion that would result in the modification of Young to arrive at the subject matter of claims 1-6, 8, 10, 12-13, 16, and 19.

The examiner argues that Young discloses a method of converting single phase alternating current to multiple phase alternating current "for simultaneously powering multiple vehicle systems . . ." This is not an accurate characterization of Young. Young is directed to commercial power plant technology, not vehicles. Young provides an apparatus for starting and running three-phase motors from a single phase commercial power line, such as that found in rural and residential areas. See column 1, lines 13-35.

Recker is directed toward solving problems relating to balancing loads between the phases produced by the inverters. Recker teaches the use of a first inverter with a first input for

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receiving DC input and an output for providing a first inverter output having first and second phases. Recker also includes a second inverter having an input for receiving DC input and an output for providing a second inverter output having first and second phases. An output circuit is connected to the first and second inverters for combining the first phases of the first and second inverter outputs into a first phase of AC output and for combining the second phases of the first and second inverter outputs into a second phase of the AC output.

There is simply no teaching or suggestion to modify Young with Recker. The examiner has pointed to no teaching in Recker of any particular benefit derived from the Recker system that would be applicable to Young. In addition, there is nothing in Young that would have led one of ordinary skill in the art to believe that the Young power distribution system was in any way deficient for Recker's purposes or was in need of modification. One of ordinary skill in the art would have found no reason, suggestion, or incentive to combine these references to arrive at the claimed subject matter.

Also, there is no reasonable expectation of success for the modification. The examiner admits that Young does not teach producing single phase AC from a DC source with PWM and relies on Recker to teach this. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPO 349 (CCPA 1959). Young teaches how to run a three-phase motor from a single phase commercial power line. To modify Young (the base reference that is directed to commercial power line technology) with Recker (the modifying reference that generates multiple phase alternating current from multiple inverters) as argued by the examiner would significantly

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change the principle of operation of Young. Thus, the rejection under 35 U.S.C. 103(a) is improper and Applicant requests that it be withdrawn.

Finally, the references taken together, do not disclose, suggest, or teach all of the claimed features. Claim 1 includes the step of producing single phase alternating current from a direct current source with pulse width modulation. The examiner admits that Young does not teach this feature. Recker also does not teach this feature. As discussed above, Recker directly converts DC input into multiple phase AC output. Thus, Recker does not teach providing a *single* phase alternating current output let alone teaching subsequent splitting of the single phase alternating current into three different phases. Finally, claim 1 also requires operating vehicle systems with the three-phase alternating current power. Young does not disclose, suggestion, or teach operating any type of vehicle system. Recker also does not teach the use of three phase AC output converted from a DC input to operate multiple vehicle systems.

Claim 10 includes the features of a direct current source and a single pulse width modulation generator for converting direct current to alternating current to provide one power supply path of alternating current having a first phase. The examiner admits that Young does not teach this feature. Recker certainly does not teach this feature. As discussed above, Recker teaches the generation of multiple phases from the DC input. Further, Recker teaches the use of multiple inverters for producing multiple phases, and does not teach the use of a single pulse width modulation generator for producing single phase alternating current.

Claim 10 also requires a splitter for splitting the one power supply path of alternating current into a plurality of power supply paths including at least a first power supply path, a second power supply path, and a third power supply path. As discussed above, Recker teaches

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generation of multiple phase output from multiple inverters where the multiple phase outputs are combined into a final multiple phase output, and does not teach splitting a single power path into first, second, and third power paths.

Claim 10 also requires a plurality of induction motors for operating multiple vehicle systems via a three-phase alternating current power comprised of the first, second, and third paths. Young does not disclose, suggest, or teach the use of multiple induction motors for operating vehicle systems. Recker also does not teach the use of induction motors for operating vehicle systems.

Further, the examiner has not provided any explanation of how the combined references teach all of the features set forth in claims 1 and 10 let alone the features set forth in the dependent claims 2-6, 8, 12-13, 16, and 19. The examiner's explanation is insufficient to support the examiner's argument that Young and Recker render these claims obvious. If the examiner upholds this rejection, Applicant respectfully requests a more detailed explanation of examiner's arguments for all of the claims rejected under this combination of references.

The examiner apparently has also rejected claims 7, 9, 11, 14-15, 17-18 and 20-21 under 35 U.S.C. 103(a) based on the combination of Young and Recker. The examiner admits that neither reference discloses the claimed features set forth in claims 7, 9, 11, 14-15, 17-18 and 20 but argues that it would have been "an obvious matter of design choice to utilize vehicle battery or thirty volt power or powering vehicle devices, since such a modification would have involved a mere change in the size of a component or utilize different suitable component is generally recognized as being within the level of ordinary skill in the art," citing In re Rose, 105 USPQ 237 (CCPA 1955). The reasoning set forth in Rose is not applicable to the instant application.

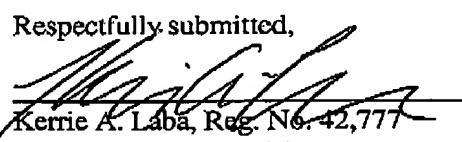
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Rose refers solely to dimensional characteristics of a component, e.g. making a package wider, longer, etc. The features set forth in claims 7, 9, 11, 14-15, 17-18 and 20-21 are not merely "dimensional" changes and instead involve unique structural and operational characteristics and features that simply are not taught by either Young or Recker. Further, it is not obvious to utilize 36/42 volt power on a vehicle because, as discussed in the background, vehicles have traditionally only used 12 volt power.

The examiner further argues that "where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art," citing In re Aller, 105 USPO 233. First, Applicant disagrees with examiner's characterization that the general conditions of all of the claims are disclosed in the prior art. The examiner has not indicated where any of the features of claims 7, 9, 11, 14-15, 17-18 and 20-21 are taught in the prior art. Second, the reasoning set forth in Aller, as well as the examiner's argument, have nothing to do with Applicant's claims. Applicant requests further explanation as to the relevance of "workable ranges" to the subject claims.

Applicant asserts that all claims are allowable over the cited prior art and requests an indication of such. Applicant believes that no additional fees are due, however, if additional fees are required the Commissioner is authorized to charge Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds.

Respectfully submitted,

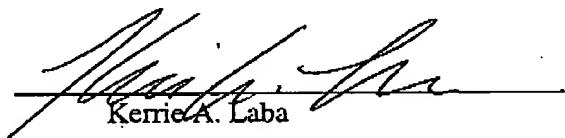

Kerrie A. Laba, Reg. No. 42,777
Carlson, Gaskey & Olds
400 W. Maple Road, Ste. 350
Birmingham, MI 48009
(248) 988-8360

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CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being facsimile transmitted to the United States patent and Trademark Office, fax number (703) 872-9306, on December 30, 2003



Kerrie A. Laba

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